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April 23, 1992

Ms. Cheryl Smith  
U.S. EPA Region IV  
Superfund Branch  
345 Courtland Street, N.E.  
Atlanta, Georgia 30365

Re: Work Assignment No. C04054 - Olin Chemical Corporation  
Technical Review Comments: Revised Sampling and Analysis Plan, April 1992  
Document Control No. C04054-OC-TR-001


Dear Ms. Smith:

Dynamac Corporation is pleased to present you with PRC's Technical Review Comments on the April 1992 Revised Sampling and Analysis Plan submitted to EPA by Olin Chemical Corporation. A diskette copy of the comments is enclosed for your convenience.

If you have any questions or comments, do not hesitate to contact Gilda Knowles or me at (404) 681-0933.

Sincerely,

DYNAMAC CORPORATION

  
David L. Rusher  
Regional Manager

DLR/bw

Enclosures

cc: Ken Meyer, EPA Region IV Project Officer (w/o encl.)  
Steve Kale, Dynamac TES Program, Manager  
Gilda Knowles, Dynamac Work Assignment Manager  
TES WA File

**TECHNICAL REVIEW COMMENTS  
REVISED SAMPLING AND ANALYSIS PLAN  
OLIN CORPORATION, McINTOSH, ALABAMA  
PREPARED BY WOODWARD-CLYDE CONSULTANTS  
APRIL 1992**

PRC Environmental Management, Inc. (PRC), under Contract No. 68-W9-0005 with the U.S. Environmental Protection Agency (EPA), performed a technical review of the Revised Sampling and Analysis Plan (SAP) for the Olin Corporation, McIntosh, Alabama site. The SAP was prepared by Woodward Clyde Consultants, Inc., for Olin Corporation. Olin Corporation has submitted this Revised SAP to perform corrective actions pursuant to the Administrative Order by Consent (Consent Order), EPA docket No. 90-13-C.

PRC reviewed this document in relation to (1) the requirements set forth in the Consent Order; (2) the objectives and methodologies outlined in the RI/FS Project Plan, May 1991; (3) EPA's Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (EPA/540/G-89/004, October 1988); (4) EPA's Standard Operating Procedures and Quality Assurance Manual, February 1991; and (5) RCRA Facility Assessment of Olin Chemicals Corporation, McIntosh, Alabama, prepared by A.T. Kearney, Inc., August 19, 1991. The Revised SAP contains Phase I and Phase II sampling results and the proposed sampling strategy for additional Operable Unit (OU) 1 and OU-2 areas.

Based on the information reviewed, PRC has determined that the Revised SAP on the whole adequately presents the Phase III sampling strategy. However, in specific sections of the document, technical deficiencies were found that require modification or explanation by Olin Corporation. These deficiencies are presented in the following general and specific comments.

**GENERAL COMMENTS**

1. Many grammatical and typographical errors occur throughout the document. It is recommended that the document undergo a thorough in-house editorial review.
2. The title of the document, "Revised Sampling and Analysis Plan," is confusing. The document proposes sampling that either extends that of Phases I and II, such as the sampling planned for OU-2, or investigates potential source areas, such as the sampling planned for OU-1. However, there is nothing in the document that can be described as a revision. Considering that Phases I and II have been completed, the logical choice for the title of this document is Phase III Sampling and Analysis Plan. The title of the document should be changed to reflect the chronology of the sampling events that have taken place at the facility under the current Consent Order.
3. The additional sampling proposed for OU-1 is quite extensive. An assessment of the extent of site contamination can not be made until the sampling results from these additional areas have been thoroughly reviewed. Only then can a determination be made on the adequacy of the proposed OU-1 sampling activities.
4. Section 2.1.1 of the text presents a combination of 10 Solid Waste Management Units (SWMU) and Areas of Concern (AOC) that have been identified in the RCRA Facility Assessment (RFA) as requiring further investigation. Other SWMUs and AOCs found by the RFA to need further investigation are discussed in Table 1; the discussion includes a suggestion for meeting the RFA recommendation. However, AOC E, four former underground storage tanks that were found by the RFA to need further investigation, is

not discussed in any section of the SAP. AOC E should be discussed in the text, and, if sampling is required, the proposed sampling should be part of this document.

5. The descriptions of each closed SWMU or AOC presented in the text should identify the regulations under which each unit was closed (for example, Alabama Department of Environmental Management or U.S. Environmental Protection Agency), if applicable, and the date of closure. This is important for identifying areas that might not have been closed adequately and that might be contributing contamination to the site.

#### SPECIFIC COMMENTS

1. Section 1.0, Page 1, Paragraph 1. The word "Plan" should be included in the sentence describing the subject document, the "Sampling and Analysis (SAP). . ."
2. Section 1.0, Page 1, Paragraph 3. The text states that the Pentachloronitrobenzene (PCNB) Plant was constructed on "an adjacent portion of the site." The actual PCNB Plant area, as shown in Figure 2, is located in the south-central portion of the site, as defined by the indicated property boundary. If the site boundary was expanded to include the PCNB plant area, then this should be stated in the text. In addition, Figure 2 should indicate that the CPC Plant area includes the PCNB, the trichloroacetonitrile, and Terrazole manufacturing areas.
3. Section 1.0, Page 1, Paragraph 3. No history of the Mercury Cell Plant is given in the introduction, although the text states that the Mercury Cell Plant was shut down in late 1982. Please include in the introduction the date of construction of the Mercury Cell Plant and any pertinent information about its operation.
4. Section 1.0, Page 2, Paragraph 0. It is unclear which plant areas are permitted under RCRA regulations (SWMUs, injection wells, and neutralization and percolation field). From the text, it appears that only the corrective action program (CAP) and treatment program currently is permitted under RCRA regulations. The SAP should clarify this point.
5. Section 1.1, Page 3. The narrative on work conducted to date should include all work conducted after July 17, 1991, including field activities.
6. Section 1.2, Page 4, Paragraph 2. The fourth sentence of the text refers to 40 CFR 271.1(c). This reference should be revised to 40 CFR 270.1(c).
7. Section 2.1.1, Page 8, Paragraph 1. A better indication of the types of "general plant debris" disposed of in the Old Plant (CPC) Landfill during the years 1972 to 1977 should be included to determine whether the landfill is a continuous source of organic contamination.
8. Section 2.1.1, Page 8, Paragraph 1. The text should indicate whether the neutralized wastewater, which was discharged to the Old Plant (CPC) Landfill, was allowed to percolate into the ground or flowed into surrounding areas. If the water flowed beyond the Old Plant (CPC) Landfill, then the final destination of the wastewater should be given. In addition, the text should indicate the date the Old Plant (CPC) Landfill was closed under Alabama Department of Environmental Management (ADEM) regulations.
9. Section 2.1.1, Page 8, Paragraph 2, first sentence. The text should be revised to correct the code citation from 40 CRF 265 to 40 CFR 265.

10. Section 2.1.1, Page 9. The discussion of the Sanitary Landfills includes information on the possibility that hexachlorobenzene (HCB) and mercury sludges were disposed of in the Sanitary Landfills. The text states that it is more likely that these types of wastes were disposed of in the Old Plant (CPC) Landfill, but the previous discussion on the Old Plant (CPC) Landfill indicates that only "general plant debris" was disposed of there. The text should include the possibility that HCB and mercury sludges were disposed of in the Sanitary Landfills. In the appropriate section, this document should include a complete description of the waste types potentially disposed of in each source.
11. Section 2.1.1, Pages 9 - 12. The locations of the Used Oil Tank and Unloading Area, Hydrazine Wastewater Unloading Area, Old Plant (CPC) Landfill Drainage Ditch, and Well Sand Residue Area discussed in this section should be shown on Figure 2, Facility Layout Map, and included by reference in the respective sections of 2.1.1 that describe each area.
12. Section 2.1.1, Page 11, Paragraph 0, Sentence 1. The text discusses calculated "relative response" values without explaining the basis for determining the value. The method for calculating "relative response" values should be described, so that the reader can understand the significance of the value.
13. Section 2.1.1, Page 11, Paragraph 1, Sentences 4 and 5. The text states that a review of site aerial photographs will be conducted before sampling to locate the former Old Plant (CPC) Landfill Drainage Ditch. Furthermore, the text states that extensive earthwork in the area of the former drainage ditch might have removed subsurface remnants of the ditch. However, in order to determine the adequacy of the sampling locations and frequency presented in section 5.1 of this document, the conditions concerning the former drainage ditch should be described in this document. Therefore, aerial photographs should be reviewed as part of the development of the SAP, and the results should be presented in the appropriate section(s) of the SAP.
14. Section 2.1.1, Page 11, Paragraph 2. In the discussion of the Mercury Cell Plant, the document should include the regulations under which the area was closed and capped.
15. Section 2.1.1, Page 12, Paragraph 1. The discussion on the Well Sand Residue Area should include the date Olin began depositing the sand residues in the brine well cavities.
16. Section 2.1.1, Page 12, Paragraph 2. The discussion on the Strong Brine Pond, should include the date of closure and the regulations under which the area was closed.
17. Section 2.1.2, Page 16, Paragraph 2. The criteria for evidence of release cited in the RFA for the Stormwater Pond and the Brine Filter Backwash Pond should be included in the text.
18. Section 2.2.1, Page 17, Paragraph 3, last sentence. The acronym "PCHB" should be revised to read "PCNB".
19. Section 2.2.1, Page 18, Paragraph 2. The text should state the type of water sample (that is, surface water or ground water) in which mercury was detected at levels at or below drinking water standards.
20. Section 2.2.2, Page 18, Paragraph 1. The date the OU-2 site characterization activities were initiated (that is, the date the remedial investigation began) should be included in the text.

21. Section 2.2.2.1, Page 21, Paragraph 0. The text indicates that core C2 was collected to a total depth of 5 feet, where a mercury concentration of 33.2 mg/kg was detected; however, Figure 9 indicates that core C2 was sampled to a total depth of 13.5 feet. Figure 9 indicates that the Phase I and Phase II C2 core samples have been combined, but this presentation is unclear in the text. The document should be revised to indicate clearly Phase I and Phase II sampling results.
22. Section 2.2.2.1, Page 21, Paragraph 1. The presentation of contaminants and concentrations in this paragraph is confusing. The paragraph should reference the tables where the sample results are tabulated.
23. Section 2.2.2.1, Page 21, Paragraph 1, second sentence. The text states that only core C3 contained hexachlorobenzene. However, core C2 is reported to contain a screening concentration of 1.7 µg/kg hexachlorobenzene, according to Figure 9 and Table 3. This concentration should be reported in the text.
24. Section 2.2.2.1, Page 21, Paragraph 1, last two sentences. The significance of comparison between concentrations of dichlorobenzene and hexachlorobenzene is unclear. The text should clearly discuss the relevance intended in this statement.
25. Section 2.2.2.1, Page 22, Paragraph 3. Although Olin claims never to have handled pesticides at the McIntosh facility, the presence of pesticides in the basin is evident, as sampling results indicate. Pesticides should not be excluded as a contaminant of concern.
26. Section 2.2.2.1, Page 24, Paragraph 1. The text discusses HCB contamination in the wastewater drainage ditches but does not address the need for additional sampling. The horizontal extent of HCB contamination should be defined more specifically in the vicinity of sediment samples OD01, DD04, and DD03, which had detected HCB concentrations of 85.7, 55.2, and 970.0 mg/kg, respectively. The sample locations are in a wetland area that is prone to flooding by the Tombigbee River; such flooding might have caused dispersal of sediment contamination into the adjoining wetlands.
27. Section 2.2.2.1, Page 23, Paragraph 2, last two sentences. The purpose of the remedial investigation is to identify all contaminants at the site, as well as the vertical and horizontal extent of contamination. Therefore, the holding time and contaminant attribution are not acceptable criteria for the exclusion of HCB, 4,4-DDD, 4,4-DDE, and 4,4-DDT as indicator contaminants.
28. Section 2.2.2.1, Page 24, Paragraph 2. Values for inorganic compounds discussed in the text are compared to common ranges for each constituent as reported in SW-874 (U.S. EPA, 1983). However, for purposes of accurate comparisons, background and control samples also should be collected within the study area to further evaluate the significance of the detected ranges for each Target Analyte List (TAL) metal.
29. Section 2.2.2.2, Figure 9. Core C2-2 is not shown in Figure 9. Also, the vertical scale does not correspond with the core depths shown.
30. Section 2.2.2.2, Page 27. The document fails to discuss whether the vertical extent of contamination can be determined. The vertical extent of contamination in the wastewater ditch, specifically at sample location OD15, has not yet been determined from Phase II core data. It is recommended that an adjacent core sample be collected in the wastewater ditch at the proposed depth of OD15.

The EPA contractor observed a 2- to 3-inch layer of an unidentified white material in the 3- to 4-foot interval of core OD15 during oversight of Phase II sampling activities. The

text should include mention of this, as well as identify that substance through analytical results.

31. Section 2.2.2.2, Page 28, Paragraph 2, last two sentences. The text should state the reason the surficial sample (0- to 1-foot interval) of core OD15 was not analyzed for mercury. If the reasoning is based on the Phase I results, those results should be stated.
32. Section 2.2.2.2, Page 28, Paragraph 3. The text refers to core sample CE2; however, no core sample CE2 appears in the appropriate tables or in Figure 9. Based on results presented in Table 4, core CE-2 is shown as core E-2. Please correct this discrepancy.
33. Section 2.2.2.2, Page 29, Paragraph 1, last sentence. The text states that hard clay was encountered at the 2- to 3-foot interval of core OD25. However, Figure 9 indicates that this interval is composed of sand. This discrepancy should be resolved.
34. Section 3.1, Page 30. It is recommended that Section 3.1 be organized according to the bulleted information presented at the beginning of the section. Separate subsections should be included to discuss 1) the Old Plant (CPC) Landfill, 2) SWMUs clean-closed under 40 CFR 265, and 3) additional SWMUs and AOCs listed in the RFA.
35. Section 3.1, Page 30, Bullet 2. The text indicates that additional sampling is needed to assess whether the SWMUs that were clean-closed under 40 CFR 265 satisfy the requirements of clean closure under 40 CFR 265. The text should include the clean closure criteria as required by 40 CFR 265.
36. Section 3.1.1, Page 30. The text states that the sampling objective at the Old Plant (CPC) Landfill is to determine whether the landfill is a continuing source of ground-water contamination. Furthermore, the assessment will be performed by characterizing soil and waste samples. However, ground-water sampling is not proposed as a part of the assessment. In order to determine whether the landfill is a continuing source of ground-water contamination, a complete assessment should include ground-water sampling and analysis. To properly characterize the source, ground-water samples should be collected in the immediate vicinity of the landfill.
37. Section 3.1.2, Page 31. The sampling objective for the Lime Ponds is to determine whether the ponds are a source of mercury contamination of ground-water. The text states that that objective will be accomplished by determining the mercury content of the buried lime waste and assessing the leachability of any detected mercury. To perform a complete assessment of the Lime Ponds, ground-water samples should be collected in the immediate vicinity of the ponds.
38. Section 3.1.3, Page 31. Information in Section 2.0 indicates there are two sanitary landfills; however, this information is not indicated in the heading of Section 3.1.3.

Also, the sampling objective is to establish whether contamination is present in the sanitary landfills. Based on the results of sampling activities, a conclusion can be drawn whether or not the landfill was used for the disposal of wastes containing HCB or mercury.

39. Section 3.1.9, Page 33. The SWMUs clean-closed under 40 CFR 265 should be listed in this section.

Also, the text should include information on the applicable standards to be used for comparison of soils for the clean-closure equivalency demonstrations.

40. Section 4.1.1, Page 36. An approximate total depth from land surface for the soil borings to be collected in the Old Plant (CPC) Landfill should be included in the text.
41. Section 4.1.1, Page 37. It should be clearly stated whether the samples collected from the four borings in the Old Plant (CPC) Landfill will be analyzed separately, and the total number of samples to be collected also should be stated.
42. Section 4.1.2, Page 38. The text does not state the approximate location of each boring to be collected from the two Lime Ponds; however, Figure 15 indicates the borings are to be collected from the centers of the former ponds. The text should include this information.
43. Section 4.1.3, Page 38. If available, the approximate depth to the base of the waste material should be stated in the text. In addition, if the base of the waste can not be determined during drilling operations, an estimated maximum boring depth should be given.
44. Section 4.1.4, Page 39. The document does not specify the proposed locations for the borings. It is recommended that the proposed boring, or a second boring, be collected as close to the existing wastewater ditch as possible, because that area might have been least disturbed by earthmoving activities.
45. Section 4.1.5, Page 40, Paragraph 2. This section refers to monitoring wells MW-6 and MW-7, located in the CPC Plant area. However, Figure 12, which presents CPC Plant area sampling locations, shows monitoring wells MP-6 and MP-7. This discrepancy in the monitoring well numbers should be corrected.
46. Section 4.1.6, Page 41, Paragraph 1. The text states that soil borings in the vicinity of the former Mercury Cell Plant area will be advanced to a depth of 4 feet below the asphalt cover. However, according to the description of the Mercury Cell Plant given in section 2.1.1 on page 11, there are concrete pads and foundation under the asphalt cover. Therefore, the text should state that soil borings will be advanced 4 feet below the concrete pads and foundation to obtain samples.
47. Section 4.1.7, Page 41. This section should include the method of sample collection for the Well Sand Residues or should make reference to Section 6.3.1, where this information is cited.
48. Section 4.1.9, Page 42. The text states that the following four SWMUs will be sampled to meet the clean-closure equivalency requirements: the Stormwater Pond, the Brine Filter Backwash Pond, the Pollution Abatement (pH) Pond, and the Mercury Waste Pile Storage Pad. However, Section 1.2, page 4 states that five clean-closed SWMUs are subject to clean-closure equivalency demonstrations under 40 CFR 270.1(c). This discrepancy should be resolved.
49. Section 4.1.9, Page 42. It should be made clear why the four SWMUs listed under this section were selected, out of nine SWMUs clean closed, for clean-closure equivalency demonstrations.
50. Section 4.1.9, Page 42. The text should cite the regulation where the Appendix VIII analysis data can be obtained.
51. Section 4.1.9, Page 44. The text should cite the regulation where the Appendix IX analysis data can be obtained.

52. Section 4.1.9, Page 44, last paragraph. It is understood that sampling directly in the Stormwater Pond, the Brine Filter Backwash Pond, and the Pollution Abatement (pH) Pond could risk the integrity of the pond liners; however, it is uncertain whether a representative sample can be obtained from one sampling location at the base of the pond dikes.

Because it is not possible to sample directly beneath the three ponds mentioned in the text, sampling activities to be conducted around the periphery of the three ponds should include a soil sample collected from the saturated zone at the top of the surficial aquifer to appropriately characterize the potential for migration of contaminants to groundwater. The sample boreholes used to collect the soil sample 2 feet below the base elevation of each pond should be advanced to the saturation depth.

53. Section 4.1.9, Page 44, last paragraph. Because the sampling strategy that the text presents for the three ponds includes sampling outside the actual ponds, an approximate depth to the base of each pond should be stated in the text.
54. Section 4.2, Page 46, Paragraph 2. Because it is difficult to determine from one core sample the vertical extent of contamination for the area, additional core samples are recommended.
55. Section 5.2, Page 48, Figure 16. It is recommended that sediment samples be collected from the area between the wastewater ditch and the Tombigbee River to adequately define the extent of contamination in the direction of the river.
56. Section 6.2, Page 50, Paragraph 1, Sentence 1. The section of the sentence "will be also be," should be changed to "also will be."
57. Section 6.2, Page 50, Bullet 1. The text states that all drilling equipment that comes in contact with soils within each borehole, but not in direct contact with soil samples, will undergo a one step decontamination process (steam clean or hand wash with a brush and Alconox detergent). However, this process is not in agreement with U.S. EPA's Standard Operating Procedures and Quality Assurance Manual (SOPQAM) for EPA Region IV (U.S. EPA, February 1991). Section E.9 of the manual recommends a seven-step decontamination process for all tools that are inserted into drilling boreholes. If field activities are to be performed in general accordance with the SOPQAM, as stated in section 6.0, page 49, then the seven-step decontamination process should be specified and followed.
58. Section 6.2, Page 51. The EPA SOPQAM recommends the use of hot tap water for cleaning and rinsing stainless steel sampling equipment. In addition, equipment should be allowed to air dry at least 24 hours after the solvent rinse. Please include these steps in the appropriate descriptions of decontamination.
59. Section 6.2, Page 51, Step # 4. The text states that pesticide- or reagent-grade isopropanol will be used as a solvent rinse. However, the EPA SOPQAM, Section E.9, states that pesticide-grade isopropanol should be used during the decontamination procedure. The SOPQAM should be followed.
60. Section 6.3.1, Page 52. It is recommended that an initial sample of the rotary drilling mud, if used, be collected for analysis.
61. Section 6.3.1, Page 52, Paragraph 2, Sentence 1. It is recommended that all lubricants proposed for use on drill stem threads, other than teflon tape, should be approved by EPA Region IV Environmental Services Division (ESD) before field activities begin. This will circumvent any questioning on the use of these lubricants effecting sample integrity.

62. Section 6.3.1, Page 53, Paragraph 1. The brand name of the drilling mud to be used for mud rotary drilling should be specified in the text and should also be approved by EPA Region IV ESD before field activities begin.
63. Section 6.3.2.1, Page 53, Bullets 1 and 2. The use of a plastic sleeve to collect soil samples should be approved by EPA Region IV ESD before field activities begin.
64. Section 7.0, Table 13. The source used to determine the non-Contract Laboratory Program (CLP) analyte reporting limits should be stated in a footnote.

The text should explain why hexachlorobenzene and mercury are being analyzed by non-CLP methods. Mercury is among the TAL metals and hexachlorobenzene is among the Target Compound List (TCL) semivolatile compounds.

65. Section 7.1, Page 67, last paragraph. This paragraph states inaccurately that a copy of the hexachlorobenzene screening method is provided in Appendix C. The material provided is not a copy of the method, but a copy of the results of the validation study that was performed on the method. The method description should be included in the document to support the statement in the text.
66. Section 7.1, Page 68, Paragraph 1. It is unclear why the screening method as well as the CLP method were used. The rationale for using both methods should be explained.
67. Section 7.1, Page 69, Paragraph 0. The phrase "the inherent in homogeneity of the samples" should be changed to "the inherent lack of homogeneity of the samples."
68. Section 7.4, Page 82, last sentence. This sentence should read, "The purpose of data validation is to determine whether the data conform to the specifications defined as suitable for the intended project usage" or language to that effect. The sentence as currently written is not clear.
69. Section 7.4, Page 84, last paragraph. This paragraph identifies the data that are considered non-CLP. Although 1,2,4,5-tetrachlorobenzene was not included, Table 13 indicates that it should be.
70. Section 7.1, Tables 16H, 16I, 16K. According to these tables, analysis for mercury is being done by method 245.1, 245.5, and 7470. The text should explain why analysis for mercury is being done by three different methods.

## REFERENCES

1. U.S. Environmental Protection Agency, 1991, Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual, U.S. EPA Region IV Environmental Services Division, Athens, Georgia (February 1).
2. U.S. Environmental Protection Agency, 1983, Office of Solid Waste and Emergency Response, Hazardous Waste Land Treatment, SW-874, Table 6.46 (April).
3. A.T. Kearney, Inc., 1991, RCRA Facility Assessment of Olin Chemicals Corporation, McIntosh, Alabama (August 19).